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TITLE : PRODUCTION OF COMPOUND SEMICONDUCTOR SINGLE CRYSTAL

ABSTRACT : PURPOSE: To obtain a compd. semiconductor single crystal while controlling the shape of the pulled up crystal with high precision and good reproducibility by preparing a physical model with the lumped constant approximating that of the pulling up process and estimating a heater temp. pattern from the model.

CONSTITUTION: When a compd. semiconductor single crystal is grown by the liq. encapsulation Czochralski method, the weight of the solidified compd. semiconductor is detected. The output of a heater is then controlled to a preset value from the weight. The heat energy balance at the solid-liq. interface in single crystal growth is estimated by using a physical model with the lumped constant approximating that of the pulling up process in this method, and the output of a heating element is controlled. The error in setting the temp. conditions on the actual grown crystal is minimized by this method regardless of the growth conditions such as the diameter and length of the crystal, device, etc. Besides, the heater temp. pattern is immediately determined from about one growth datum, which has been determined from many growth data, when the crystal growth condition is changed.

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